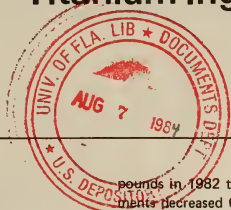




# Titanium Ingot, Mill Products, and Castings

SUMMARY FOR 1983

 ITA991(83)-13  
 Issued July 1984


## SUMMARY OF FINDINGS

The total production of titanium ingot for 1983 totaled 52.9 million pounds. This represented less than a 1-percent decrease from the 1982 figure of 53.1 million pounds. Consumption of titanium ingot decreased 5 percent from 55.1 million pounds in 1982 to 52.5 million pounds in 1983. Net shipments of titanium mill products decreased by 13 percent from 36.6 million

pounds in 1982 to 31.9 million pounds in 1983. Castings shipments decreased 6 percent from 521 thousand pounds in 1982 to 488 thousand pounds in 1983. The statistics in this publication are based on a survey of manufacturers and represent total U.S. shipment of titanium ingot mill products and castings. Estimates are included for companies whose reports were not received in time for tabulation. A more complete description of this survey appears on page 6.

Table 1. TITANIUM INGOT PRODUCTION, RECEIPTS, SHIPMENTS, CONSUMPTION, AND ENDING INVENTORIES:  
1983 AND 1982

(Quantities in thousands of pounds)

Month and year	Production	Receipts	Shipments	Consumption	Ending inventories
1983					
Total <sup>1</sup> .....	52,878	11,345	10,884	52,465	(X)
January.....	3,544	892	621	3,698	4,938
February.....	3,698	839	977	3,560	5,020
March.....	4,310	1,181	1,151	4,354	5,017
April.....	3,657	746	918	3,446	5,141
May.....	3,769	968	1,002	3,665	5,221
June.....	5,048	924	945	5,168	5,052
July.....	4,148	1,141	867	3,608	5,994
August.....	4,361	961	805	4,814	5,920
September.....	5,045	950	950	5,372	5,527
October.....	4,799	890	873	5,068	5,472
November.....	4,745	994	968	4,770	5,523
December.....	5,754	859	807	4,942	6,546
1982					
Total <sup>1</sup> .....	53,072	8,670	8,492	55,161	(X)
January.....	6,452	955	1,363	6,222	6,523
February.....	6,505	1,252	973	6,202	6,686
March.....	6,858	1,071	867	7,320	6,552
April.....	5,001	806	769	5,204	6,405
May.....	3,610	670	456	4,480	3,994
June.....	4,017	588	653	4,631	5,411
July.....	3,284	542	528	3,118	5,634
August.....	3,877	589	466	3,676	5,884
September.....	3,392	498	846	3,407	5,579
October.....	3,598	534	671	3,829	5,386
November.....	3,444	532	595	4,058	4,707
December.....	3,034	633	305	3,014	5,068

(X) Not applicable.

<sup>1</sup>Total inventory figures are those shown for December.

Table 2. TITANIUM INGOT MILL PRODUCTS AND CASTINGS: 1983 AND 1982

(Quantities in thousands of pounds)

Product description	Total	January	February	March	April	May	June	July	August	September	October	November	December
1983													
Mill products:													
Production.....	34,647	2,651	2,418	2,887	2,567	3,021	3,132	2,577	2,845	3,546	3,020	2,864	3,119
Sheet and strip.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Plate.....	17,545	1,033	1,096	1,491	1,335	1,584	1,743	1,224	1,589	1,859	1,445	1,498	1,608
Forging and extrusion billet.....	4,389	241	306	258	317	291	458	350	354	390	447	487	487
Rod and bar.....													
Fastener stock and wire.....													
Extrusions (other than tubing).....	12,713	1,377	1,016	1,138	1,915	1,146	1,931	1,003	1,862	1,297	1,085	1,919	1,021
Pipe and tubing.....													
Other.....													
Receipts.....	4,143	168	224	191	198	422	355	314	432	735	314	360	430
Sheet and strip.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Plate.....	3,503	128	153	167	174	389	241	254	356	673	288	324	336
Forging and extrusion billet.....	(2)	-	-	(2)	-	-	(2)	-	-	-	-	-	-
Rod and bar.....													
Fastener stock and wire.....	1,240	140	171	124	124	133	1,114	160	1,276	162	126	136	174
Extrusions (other than tubing).....													
Pipe and tubing.....													
Other.....													
Net shipments <sup>3</sup> .....	31,866	2,665	2,633	2,876	2,479	2,691	2,642	2,287	2,437	3,050	2,656	2,547	2,903
Sheet and strip.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Plate.....	15,205	1,343	1,320	1,472	1,368	1,183	1,367	992	1,141	1,315	1,107	1,204	1,393
Forging and extrusion billet.....	4,316	230	335	262	303	310	412	351	356	394	486	423	454
Rod and bar.....													
Fastener stock and wire.....													
Extrusions (other than tubing).....	12,345	1,092	1,978	1,142	1,808	1,198	1,863	1,944	1,940	1,341	1,063	1,920	1,056
Pipe and tubing.....													
Other.....													
Castings:													
Production <sup>4</sup> .....	1,005	83	104	100	94	81	84	48	71	85	75	77	103
Shipments.....	488	34	61	55	42	47	41	29	32	35	29	44	39
1982													
Mill products:													
Production.....	37,221	4,475	4,185	4,361	3,209	3,084	3,188	2,433	2,339	2,877	2,357	2,347	2,366
Sheet and strip.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Plate.....	19,243	2,493	2,332	2,444	1,632	1,703	1,787	1,246	1,087	1,383	1,129	1,041	966
Forging and extrusion billet.....	4,100	443	416	312	440	423	228	274	341	359	329	1,041	966
Rod and bar.....	588	77	72	82	67	64	60	24	23	67	14	19	19
Fastener stock and wire.....													
Extrusions (other than tubing).....	13,290	1,462	1,365	1,523	1,070	1,894	1,113	1,889	1,888	1,068	1,885	1,079	1,054
Pipe and tubing.....													
Other.....													
Receipts.....	4,789	825	830	704	353	357	387	144	162	379	307	177	164
Sheet and strip.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Plate.....	4,303	740	744	643	320	321	345	129	146	340	275	157	143
Forging and extrusion billet.....	-	-	-	-	-	-	-	-	-	-	-	-	-
Rod and bar.....	-	-	-	-	-	-	-	-	-	-	-	-	-
Fastener stock and wire.....	-	-	-	-	-	-	-	-	-	-	-	-	-
Extrusions (other than tubing).....	1,486	185	186	161	133	136	142	115	116	139	132	120	121
Pipe and tubing.....													
Other.....													
Net shipments <sup>3</sup> .....	36,562	3,655	3,458	4,454	3,436	2,946	3,166	2,382	2,342	2,994	2,359	2,501	2,869
Sheet and strip.....	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Plate.....	18,185	1,707	1,753	2,302	1,910	1,541	1,622	1,222	1,099	1,329	1,110	1,221	1,369
Forging and extrusion billet.....	4,166	612	417	444	313	249	353	273	322	359	310	181	333
Rod and bar.....	551	92	69	82	73	53	52	29	30	71	(3)	(3)	(3)
Fastener stock and wire.....													
Extrusions (other than tubing).....	13,660	1,244	1,219	1,626	1,140	1,103	1,139	1,858	1,891	1,235	1,939	1,099	1,167
Pipe and tubing.....													
Other.....													
Castings:													
Production <sup>4</sup> .....	797	77	83	90	69	59	64	61	60	36	52	72	74
Shipments.....	521	43	55	59	54	45	39	35	35	36	43	40	37

- Represents zero.

<sup>1</sup>Data for sheet and strip, plate, extrusions (other than tubing), and pipe and tubing have been combined to avoid disclosing individual company data.<sup>2</sup>Data for rod and bar have been combined with fastener stock and wire, extrusions, pipe and tubing, and other to avoid disclosing individual company data.<sup>3</sup>Net shipments is the sum of mill products shipments plus mill products consumed in the manufacture of fabricated products, less total receipts.<sup>4</sup>Data for fastener stock and wire is included with extrusions, pipe and tubing and other to avoid disclosing individual company data.<sup>5</sup>Includes gross weight of casting before machining.

Table 3. NET SHIPMENTS, EXPORTS, IMPORTS, AND APPARENT CONSUMPTION OF TITANIUM INGOT, MILL PRODUCTS, AND CASTINGS: 1983

(Thousands of pounds)

Month	Manufacturers' net shipments (quantity)	Exports of domestic merchandise <sup>1</sup> 2			Percent exports to manufacturers' net shipments (quantity)	Imports for consumption <sup>1</sup> 4		Apparent consumption <sup>6</sup> (quantity)	Percent imports to apparent consumption (quantity)
		Quantity	Value at port	Estimated producers' value <sup>3</sup>		Quantity	Value <sup>5</sup>		
TOTAL									
Total.....	42,750	4,307	52,199	50,699	17	2,033	18,276	40,476	4
Titanium ingot and forging and extrusion billet/...	26,089	2,740	29,234	28,425	17	161	1,443	23,510	2
Titanium mill products.....	16,661	1,567	22,965	22,274	17	1,872	16,833	16,966	10
DECEMBER									
Total.....	3,710	753	9,690	9,332	5	129	1,134	3,086	4
Titanium ingot and forging and extrusion billet/...	2,200	240	2,518	2,425	10	1	17	1,961	(2)
Titanium mill products.....	1,510	513	7,172	6,907	7	128	1,117	1,125	11
NOVEMBER									
Total.....	3,515	268	2,829	2,753	8	156	1,445	3,403	5
Titanium ingot and forging and extrusion billet/...	2,172	180	1,727	1,681	8	5	62	1,997	(2)
Titanium mill products.....	1,343	88	1,102	1,072	7	151	1,383	1,406	11
OCTOBER									
Total.....	3,529	361	3,623	3,526	10	195	1,531	3,363	6
Titanium ingot and forging and extrusion billet/...	1,980	265	2,545	2,477	13	13	139	1,728	1
Titanium mill products.....	1,549	96	1,078	1,049	6	182	1,392	1,635	11
SEPTEMBER									
Total.....	4,000	434	4,018	3,910	11	229	2,088	3,795	6
Titanium ingot and forging and extrusion billet/...	2,265	377	3,210	3,124	17	30	210	1,918	2
Titanium mill products.....	1,735	57	808	786	3	199	1,878	1,877	11
AUGUST									
Total.....	3,242	349	3,898	3,794	11	181	1,632	3,074	6
Titanium ingot and forging and extrusion billet/...	1,946	293	2,803	2,728	15	9	62	1,662	1
Titanium mill products.....	1,296	56	1,095	1,066	4	172	1,570	1,412	12
JULY									
Total.....	3,154	274	3,732	3,632	9	169	1,262	3,049	6
Titanium ingot and forging and extrusion billet/...	1,859	148	2,125	2,068	8	12	93	1,723	1
Titanium mill products.....	1,295	126	1,607	1,564	10	157	1,169	1,326	12
JUNE									
Total.....	3,587	371	4,350	4,233	10	194	2,017	3,410	6
Titanium ingot and forging and extrusion billet/...	2,312	269	2,497	2,430	12	20	173	2,063	1
Titanium mill products.....	1,275	102	1,853	1,803	8	174	1,844	1,347	13
MAY									
Total.....	3,693	379	3,742	3,641	10	241	2,062	3,555	7
Titanium ingot and forging and extrusion billet/...	2,185	241	1,815	1,766	11	24	185	1,968	1
Titanium mill products.....	1,508	138	1,927	1,875	9	217	1,877	1,587	14
APRIL									
Total.....	3,397	327	4,650	4,525	10	102	950	3,172	3
Titanium ingot and forging and extrusion billet/...	2,286	230	3,362	3,272	10	9	95	2,065	(2)
Titanium mill products.....	1,111	97	1,288	1,253	9	93	855	1,107	8
MARCH									
Total.....	4,027	385	5,312	5,169	10	169	1,581	3,811	4
Titanium ingot and forging and extrusion billet/...	2,623	229	3,024	2,943	9	7	88	2,401	(2)
Titanium mill products.....	1,404	156	2,288	2,226	11	162	1,493	1,410	11
FEBRUARY									
Total.....	3,610	124	2,627	2,556	3	162	1,467	3,648	4
Titanium ingot and forging and extrusion billet/...	2,297	56	1,111	1,081	2	25	234	2,266	1
Titanium mill products.....	1,313	68	1,516	1,475	5	137	1,233	1,382	10
JANUARY									
Total.....	3,286	282	3,728	3,628	7	106	1,107	3,110	3
Titanium ingot and forging and extrusion billet/...	1,964	212	2,497	2,430	9	6	85	1,758	(2)
Titanium mill products.....	1,322	70	1,231	1,198	5	100	1,022	1,352	7

(2) Less than one-half of 1 percent.

<sup>1</sup> See table 5 for comparison of Standard Industrial Classification (SIC) codes, Schedule B export numbers, and TSUSA import numbers.<sup>2</sup> Source: Bureau of the Census report PT-410, U.S. Exports—Schedule E—Commodity by Country.<sup>3</sup> These values were derived by use of adjustment factors to exclude freight, insurance, and other charges incurred in moving goods to the port of export. This adjustment is made to convert the values to an approximation of the producers' value of exported goods. Current adjustment factors are based on data for 1981 which are published in Origin of Exports of Manufacturing Establishments, NBS(AS)-5, appendix B. Comparable adjustment factors for earlier years are based on similar factors developed for 1971 and 1972. The current adjustment factor for this report is 0.9731.<sup>4</sup> Source: Bureau of the Census report IM 145-X, U.S. Imports for Consumption and General Imports.<sup>5</sup> The value includes c.i.f. (cost, insurance, and freight) at the first port of entry in the United States plus U.S. import duties and other charges to the import point.<sup>6</sup> Apparent consumption is derived by subtracting exports from the total of net shipments plus imports.<sup>7</sup> Comparability of output, export, and import classifications for ingot and billet assume that bloom, sheet bar, and slab are reported as ingot on billet in the output codes. Figures for imports of ingot and billet also include powder, crystal, and similar forms which are excluded from the output and export codes.

Table 4. NET SHIPMENTS, EXPORTS, IMPORTS, AND APPARENT CONSUMPTION OF TITANIUM INGOT, MILL PRODUCTS, AND CASTINGS: 1982

(Thousands of pounds)

Month	Manufacturers' net shipments (quantity)	Exports of domestic merchandise <sup>1</sup> 2			Percent exports to manufacturers' net shipments (quantity)	Imports for consumption <sup>1</sup> 4		Apparent consumption <sup>5</sup> (quantity)	Percent imports to apparent consumption (quantity)
		Quantity	Value at port	Estimated producers value <sup>3</sup>		Quantity	Value <sup>3</sup>		
TOTAL									
Total.....	45,054	7,200	100,606	97,901	16	2,166	22,269	40,020	5
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	26,677	4,392	60,239	58,618	16	426	3,976	22,711	2
Titanium mill products.....	18,377	2,808	40,367	39,283	15	1,740	18,293	17,309	10
DECEMBER									
Total.....	3,174	290	4,267	4,152	9	107	873	2,991	4
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	1,674	221	2,927	2,848	13	1	4	1,454	(2)
Titanium mill products.....	1,500	69	1,340	1,304	5	106	869	1,537	7
NOVEMBER									
Total.....	3,096	609	7,638	7,432	20	110	1,056	2,597	4
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	1,816	403	4,558	4,435	22	1	5	1,414	(2)
Titanium mill products.....	1,280	206	3,080	2,997	16	109	1,051	1,183	9
OCTOBER									
Total.....	3,030	387	5,094	4,957	13	109	1,265	2,752	4
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	1,781	137	2,175	2,116	8	12	194	1,656	1
Titanium mill products.....	1,249	250	2,919	2,841	20	97	1,071	1,096	9
SEPTEMBER									
Total.....	3,840	525	6,329	6,159	14	304	3,057	3,619	8
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	2,175	162	2,556	2,487	9	9	101	2,022	(2)
Titanium mill products.....	1,665	363	3,773	3,672	22	295	2,956	1,597	18
AUGUST									
Total.....	2,808	900	9,985	9,716	32	188	1,964	2,096	9
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	1,565	482	6,022	5,860	31	59	505	1,142	5
Titanium mill products.....	1,243	418	3,963	3,856	34	129	1,459	954	14
JULY									
Total.....	2,910	413	5,603	5,453	14	211	1,875	2,708	8
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	1,750	224	2,731	2,658	13	3	37	1,529	(2)
Titanium mill products.....	1,160	189	2,872	2,795	16	208	1,838	1,179	18
JUNE									
Total.....	3,819	565	7,144	6,952	15	103	842	3,357	3
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	2,275	492	5,496	5,348	22	70	437	1,853	4
Titanium mill products.....	1,544	73	1,648	1,604	5	33	405	1,504	2
MAY									
Total.....	3,402	666	13,077	12,725	20	329	3,285	3,065	11
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	1,997	439	9,165	8,918	22	106	1,011	1,664	6
Titanium mill products.....	1,405	227	3,912	3,807	16	223	2,274	1,401	16
APRIL									
Total.....	4,205	537	7,845	7,634	13	191	2,697	3,859	5
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	2,679	376	5,066	4,930	14	71	538	2,374	3
Titanium mill products.....	1,526	161	2,779	2,704	11	120	1,559	1,485	8
MARCH									
Total.....	5,321	591	9,570	9,313	11	222	2,726	4,952	4
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	3,169	366	5,586	5,436	12	39	584	2,842	1
Titanium mill products.....	2,152	225	3,984	3,877	10	183	2,142	2,110	9
FEBRUARY									
Total.....	4,431	734	11,456	11,148	17	187	1,911	3,874	5
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	2,726	433	6,037	5,875	16	25	194	2,318	11
Titanium mill products.....	1,705	301	5,419	5,273	18	162	1,717	1,556	10
JANUARY									
Total.....	5,018	983	12,598	12,259	20	105	1,318	4,140	3
Titanium ingot and forging and extrusion billet <sup>7</sup> ...	3,070	657	7,920	7,707	21	30	366	2,443	12
Titanium mill products.....	1,948	326	4,678	4,552	17	75	952	1,697	4

(2) Less than one-half of 1 percent.

<sup>1</sup>See Table 5 for comparison of Standard Industrial Classification (SIC) codes, Schedule B export numbers, and TSUSA import numbers.<sup>2</sup>Source: Bureau of the Census report FT-410, U.S. Exports—Schedule E—Commodity by Country.<sup>3</sup>These values were derived by use of adjustment factors to exclude freight, insurance, and other charges incurred in moving goods to the port of export. This adjustment is made to convert the values to an approximation of the producers' value of exported goods. Current adjustment factors are based on data for 1981 which are published in Origin of Exports of Manufacturing Establishments, M(1)(45)-5, appendix B. Comparable adjustment factors for earlier years are based on similar factors developed for 1971 and 1972. The current adjustment factor for this report is 0.9731.<sup>4</sup>Source: Bureau of the Census report IM 145-X, U.S. Imports for Consumption and General Imports.<sup>5</sup>The value includes c.i.f. (cost, insurance, and freight) at the first point of entry in the United States plus U.S. import duties and other charges to the import point.<sup>6</sup>Apparent consumption is derived by subtracting exports from the total of net shipments plus imports.<sup>7</sup>Comparability of output, export, and import classifications for ingot and billet assume that blown, sheet bar, and slab are reported as ingot on billet in the output codes. Figures for imports of ingot and billet also include powder, crystal, and similar forms which are excluded from the output and export codes.

Table 5. COMPARISON OF STANDARD INDUSTRIAL CLASSIFICATION (SIC) CODES, SCHEDULE B EXPORT NUMBERS, AND TSUSA IMPORT NUMBERS

Product code	Product description	Export number	Product description	Import number	Product description
33562 74 <sup>1</sup>	Titanium ingot and forging and extrusion billet	630.6520	Titanium ingots, billets blooms, sheet bars, and slabs	<sup>2</sup> 629.1460	Unwrought titanium metal, except sponge
33562 79	Titanium mill products	630.6570	Wrought titanium metal including alloys (excludes sponge ingots, billets blooms, sheet bars, slab, waste and scrap)	629.2000	Wrought titanium metal, including alloys (excludes waste, scrap, and unwrought metal

<sup>1</sup> Comparability of output, export, and import classification for ingot and billet assume that bloom, sheet bar, and slab are reported as ingot or billet in the output numbers.

<sup>2</sup> Figures for imports of ingot and billet also include powder crystals and similar primary forms which are excluded from the output and export numbers.

## DESCRIPTION OF SURVEY

*Scope of Survey*—This survey covers companies engaged in producing titanium ingot, mill products, and castings.

*Survey Methodology*—The statistics in this publication are collected by mail on Bureau of the Census monthly Form ITA991, Titanium Metal. The panel for this survey includes all known producers of titanium ingot, mill products, and castings, approximately 30 companies.

*Survey Error*—Figures for the current month include estimates for panel members for which reports were not received in time for tabulation. Such missing figures are “imputed” based on month-to-month movements shown by reporting firms. Imputation generally is limited to a maximum of 10 percent for any one data cell. Figures with imputation rates greater than 10 percent are footnoted.

The imputation rate is not an explicit indicator of the potential error in published figures due to nonresponse because the actual monthly movements for nonrespondents may or may not closely agree with the imputed movements. The probable range of difference between the actual and imputed figures is not precisely known but is assumed to be small. The degree of uncertainty regarding the accuracy of the published data increase as the percentage of imputation increases. Figures with imputation rates above 10 percent should be used with caution.

*Revision to Previous Period Data*—Data may be revised as the result of corrected figures received from respondents or other corrections. Figures which have been revised by more than 5 percent from previously published figures are indicated by footnotes.

## EXPLANATION OF TERMS

*Gross Shipments of Mill Products*—Represents mill shapes between producers plus mill shapes consumed in the production of fabricated products such as forgings.

*Net Shipments of Mill Products*—Represents gross shipments less receipts. For detail categories, net shipments also includes consumption in the manufacture of other mill shapes.

## COMPARISON OF EXPORT, IMPORT, AND DOMESTIC OUTPUT DATA

The Standard Industrial Classification (SIC) system used for domestic output and the statistical export and import commodity classifications were developed independently. This results in considerable difficulty in comparing the three types of data for many commodity areas. The domestic output classification is based on type of industry; on the other hand, the export and import classification system is more materials oriented. Aside from the differences in the basic commodity classifications, there are additional problems involving import data, since there are a substantial number of imported commodities which

are not produced in the United States or which are produced only in very small quantities and which, therefore, have no comparable domestic output classification. The relationships shown in this report should be considered only as approximations, since, in addition to the problems mentioned above, there are also the following problems affecting the comparability of the three sets of data.

*Valuation*—There are different methods of valuation for the three types of data:

*Domestic Output*—Valued at the point of production. It includes the net sales price, f.o.b. plant, after discounts and allowances, exclusive of freight charges and excise taxes.

*Exports*—Valued at the point of exportation. It includes the selling price, or cost if not sold, and inland freight, insurance, and other charges to the export point.

Estimated producers' values of exports have also been developed. These values more closely approximate the values reported for domestic output because they exclude freight, insurance, and other charges applied from the producing plant to the export point.

*Imports*—Valued at the first port of entry in the United States. It includes c.i.f. (cost, insurance, and freight), duty, and other charges to the import point.

*Duplication in Quantity and Value of Output*—Because producers' shipments of some commodities may be used as materials for incorporation into other commodities, combinations of data for such commodities may contain a certain amount of duplication. Thus, percentages of exports to output or imports to apparent consumption (output plus imports minus exports) at four-digit or broader levels may be understated. Where duplication is known to be substantial, the output data are appropriately noted in the table.

*Estimated Low-Valued Export and Import Transactions*—The import statistics include estimated value data for shipments valued under \$251. Effective August 1982, value data for shipments valued under \$251 are estimated from factors based on the ratios of under \$251 shipments to individual country totals. Prior to August 1982, estimates were based on a 1-percent sample of documents for shipments valued under \$251. Effective with the statistics for March 1979, the lower limit of the value ranges for estimating data for low-value export shipments was raised from \$251 to \$501. Effective July 1981, the statistics for countries other than Canada reflect fully compiled data for shipments valued over \$500. Prior to July 1981, these data were fully compiled only for shipments valued \$1,000 and over, while shipments valued \$501 to \$999 were estimated, based on a 50-percent sample.



*Manufacturers' Shipments, Not Specified by Kind*—The value of manufacturers' shipments at the four-digit industry level often includes a small amount which is not distributed among the individual five-digit product classes. Export and import percentages at the more detailed levels might, therefore, be slightly overstated.

*Time Lag Between Output and Exports*—There will be a lag between the time a commodity is produced or shipped by the producer and the time it is actually exported, especially when intermediaries (wholesalers, exporters, etc.) are involved. Ordinarily, this type of discrepancy is insignificant in annual figures.

*"Direct" vs "Total" Commodity Exports and Imports*—Export and import data do not include materials which are incorporated into other more finished products and exported or imported in finished form. Thus, by showing only direct exports and imports, the relation of exports to output and imports to apparent consumption for intermediate products is considerably understated.

*Used Commodities*—With a few exceptions, used or rebuilt commodities are classified in the same import or export codes as is new merchandise. Percentages are thus overstated to the extent that used or rebuilt products are significant in trade.

*Geographic Area of Coverage*—Import and export data reflect the movement of merchandise into and out of U.S. foreign trade zones, the U.S. Virgin Islands, and the U.S. customs territory (includes the 50 States, the District of Columbia, and Puerto Rico).

## HISTORICAL NOTE

Data on titanium metal have been collected by the Bureau of the Census since 1955. Historical data may be obtained from Current Industrial Reports (called Facts for Industry before 1959) available at your local Federal Depository Library. A list of these libraries may be obtained from the Bureau of the Census regional offices:

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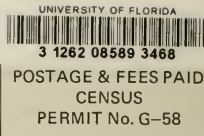
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## CONTACTS FOR DATA USERS

Subject Area	Contact	Phone Number
Current Industrial Report ITA991	Nathaniel Shelton	(301) 763-5547
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